

STEAM CONVECTION OVENS

FCV/G 6-10-20

FCV/E 6-10-20

CONTENTS

Page

GENERAL NOTES	2
Functional features	2
Cooking methods	2
Performance capabilities	3
Functional level	4
INSTALLATION NOTES	6
ELECTRONIC SECTION	5
The various electronic cards	5
Replacing the cards	5
Temperature visualisation, Lamp test	7
Boiling point temperature calibration	9
PARAMETER PROGRAMMING	10
Default programming	10
Normal programming	11
Advanced programming	12
Oven chamber temperature correction para.	13
Oven chamber thermostat setting para.	13
STEAM/CONVECTION SECTION	14
Instant steam circuit	14
Gas system with air blown burners	15
TROUBLE SHOOTING GUIDE	16
ELECTRONIC CARD PARAMETERS	
List of parameters 5998 - 79400	

GENERAL NOTES

Functional features

The combined steam convection oven is based on the use of two heating methods with high heat-exchange capabilities guaranteeing rapid cooking: Hot air with forced convection and steam

These two methods allow different types of cooking by using or combining the following:

- steam at atmospheric pressure
- hot dry air with forced convection
- hot moist air with forced convection
- combined cooking using automatic sequences

To enhance these properties a new generation of ovens using innovative technology and advanced electronics has been created leading to:

- increased performance
- reduced power consumption
- higher product reliability.

The range is made up of number of models which vary as follows:

- the capacity
- the type of heating, gas or electricity
- the functional level.

Models

FCV 6 1/1	GN 1/1 pans	Oven on support
FCV 10 1/1	GN 1/1 pans	Oven on support
FCV 10 2/1	GN 2/1 pans	Oven on support
FCV 20 1/1	GN 1/1 pans	Freestanding oven
FCV 20 2/1	GN 2/1 pans	Freestanding oven

Functional level

By "functional level", we mean:

- the cooking cycles that the oven is able to perform
- how much automation the oven has
- the parameter setting method

BASIC COOKING METHODS

Cooking methods available in all levels:

• Hot air (30-300 °C)

Ideal for roasting, browning, au-gratin.

Better results for the au-gratin method can be obtained by leaving the steam relief valve open

• Steam (100 °C)

Ideal for boiling fish, vegetables, meat, ...

• Combined (30-250 °C)

Ideal for all types of meat, in particular for large joints

Cooking methods specific to certain levels

• Thermostatically controlled steam (30-99 °C)

Ideal for:

- boiling or cooking delicate dishes: fruit, mushrooms, patè, crème caramel, puddings, mousse, souffles
- vacuum cooking and reconditioning
- leavening dough.

A particular application of this cycle is the so-called “sous vide” method of cooking of food in special heat-resistant bags or containers.

- **Reconditioning (most used temperatures are between : 110 and 160 °C)**

Ideal for reconditioning pre-cooked and chilled food which has been prepared in baking tins, portions or dishes.

In the level 6 ovens, this cycle is already stored in the automatic programming memory and is made up as follows:

- a forced-convection/steam cycle with controlled humidity;
- temperature value pre-set to 180 °C (can be changed, if desired);
- full-power operation;
- continuous operation, as indicated by the word “Cont” appearing on the display; this cycle carries on whether or not the door is open. The meat probe may also be used as an alternative to the continuous cooking cycle.

- **Cook & Hold**

Ideal for cooking large joints of meat.

Advantages:

- low weight loss thanks to its gentle cooking action, using reduced air circulation speed and low power;
- the cooking and subsequent holding stage allows the appliance to be operated outside normal working hours. This cycle is characterized by two stages, i.e.:
 - COOK, which is carried out at low power and using a reduced fan speed;
 - HOLD, which is carried out at a holding temperature of at least 65-70 °C, with the fan operating alternately at low speed (pausing for 5 seconds and then operating for 25 seconds).

PERFORMANCE

- High degree of cooking uniformity using the “FLOW CHANNEL” ventilation system.
- Rapid temperature increments and fast steam generation. The gas-heated versions have the same rapidity as the electric versions due to the use of air-blown burner technology.
- Forced-convection cycles at temperatures of up to 300 °C
- Steam at 100 °C for appliances with instant steam generation (ISG).
- The regeneration and “SOUS VIDE” cooking cycles are standard in all models from level 3 onwards.
- The meat probe is standard in all models from level 3 onwards.
- Oven chamber moisture control is standard for all programmable models.

- The new electronic controller using “Fuzzy” type logic :
 - optimizes the operation of the appliance in relation to the food load;
 - has sensitive and precise temperature control;
 - drastically reduces waste energy consumption.
- The vapour damping system uses less water thanks to a microprocessor which only allows it to operate when the appliance is producing steam.
- The “DUAL-ECO” or “BY-PASS” system avoids energy waste by only producing the amount of steam required.

The “FLOW CHANNEL” ventilation system

Obtaining quality cooking results when using the convection or steam convection cycles is directly dependent on the correct air intake and circulation in the oven chamber. The flow channel system (fig.1) optimizes the air flow inside the oven chamber and guarantees uniform temperatures both over the entire surface area of the baking tins and throughout the cross section of the food load, this is due to:

- the cavity which uses trapezoidal air channels;
- the air diffusers which also act as tray and baking tin supports.
- the ventilator fan which is situated towards the rear of the oven.

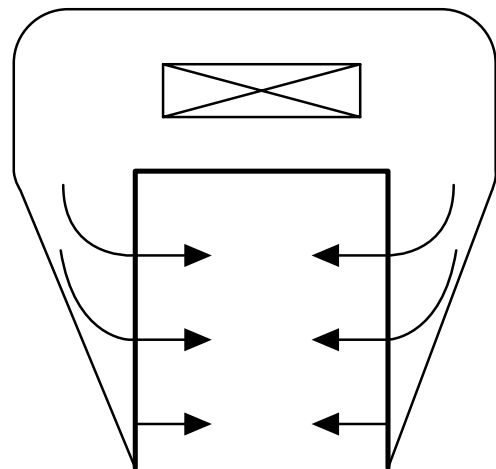


Fig.1

GENERAL FUNCTION CHARACTERISTICS

FUNCTION LEVEL	LEV 2	LEV 3	LEV 4 ACTIVE COMBI	LEV 6
COOKING FUNCTIONS:				
HOT AIR	300 °C	300 °C	300 °C	300 °C
STEAM	100 °C	100 °C	100 °C	100 °C
STEAM/CONVECTION	250 °C	250 °C	250 °C	250 °C
THERMOSTATICAL STEAM	-	30-99 °C	15-99 °C	15-99 °C
MEAT PROBE	-	•	•	•
REGENERATION CYCLE	-	•	•	•
LOW SPEED - LOW POWER	-	-	•	•
STEAM RELIEF VALVE	Manual	Manual	Manual	Automatic
HUMIDITY CONTROL	-	-	•	•
HUMIDITY ADJUSTMENT	-	-	-	•
AUTOMATIC SEQUENCES	-	-	2 STAGES	6 STAGES
PROGRAMMABLE	-	-	-	• (50 programs)
CLEAN CYCLE	•	•	•	•
AUTOMATIC DEVICES:				
VAPOUR DAMPING SYSTEM	•	•	•	•
BOILER DRAINAGE	-	Manual (*)	Manual	Automatic
OVEN CHAMBER RAPID COOLING	Air	Air	Air+Water	Air+Water
LED/ DISPLAY IDENTIFICATION:				
DESCALE WARNING	-	• (*)	•	•
BOILER PREHEATING	-	• (*)	•	•
BOILER EMPTY WARNING	-	• (*)	•	•
FAILURE TYPE	•	•	•	•
CAVITY TEMPERATURE	DIGITAL	DIGITAL	DIGITAL	DIGITAL
COOKING TIME	ANALOGICAL	ANALOGICAL	DIGITAL	DIGITAL
MEAT PROBE	-	DIGITAL	DIGITAL	DIGITAL
SET-UP				
COOKING CYCLES	Selector	Selector	Key pad	Key pad
TEMPERATURE PROGRAMMING	Potentiometer	Potentiometer	Encoder	buttons
TIME PROGRAMMING	Timer	Timer	Encoder	buttons
MEAT PROBE	-	Encoder	Encoder	Encoder
Other characteristics				
External material	Aisi 304	Aisi 304	Aisi 304	Aisi 304
Water protection grade	IPX5	IPX5	IPX5	IPX5
Illumination	Normal	Normal	Halogen	Halogen

(*) NOT PRESENT IN THE FCV 6 MODEL

OVENS RANGE / GAMMA FORNI

[illegible]

INSTALLATION NOTES

The installation procedures are described in detail in the instruction manual supplied with the appliance. The following notes only regard certain points which are considered to be essential for the correct operation of the oven.

Altitude of the installation site

When the oven is installed in sites which have an altitude greater than 300 metres above sea level the parameter “**ALTSLM**”, which is stored in the microprocessor, must be correctly set by giving it the actual height above sea level of the site. (To enter the parameters read the chapter “Normal programming”)

Note: When the altitude is greater than 300 metres above sea level the boiling point is less than 100°C. For this reason whenever references to steam cycles at 100°C are mentioned in the text they refer to ovens installed at altitudes less than 300 metres above sea level.

Positioning

The oven should be positioned in such a way so as to avoid the possibility of steam or dust (e.g. flour) coming into contact with the ventilation openings located below the oven's control panel. This is in order to avoid these substances being sucked into the oven by the electronic components ventilator fan.

Electrical connection

The polarity of the power supply must be respected in gas ovens fitted with air blown burners. The neutral wire must be connected to the binding post marked with the letter “N” and the live wire must be connected to the binding post marked with the letter “L”.

Adjusting the water pressure in ovens which use instant steam generation (ISG)

In ISG type ovens the water pressure must be set to a rating of 120 kPa (1,2 bar) in order for the steam cycle to function correctly. To set the correct levels read the relative chapter in this manual.

ELECTRONIC SECTION

THE DIFFERENT TYPES OF P.C.B. CARDS

Each oven can have from 2 to 3 electronic cards.

These are divided into two types:

- mother boards, with all inputs
- user interface cards

The mother boards are subdivided into the following categories:

- POW 1 as used in ISG ovens
- POW 2 as used in ovens with steam generators.

The mother board POW 2 differs from the POW 1 board for as it features an additional series of level control relays.

The user interface boards are identified by the following acronyms:

UIA as used in levels L2, L3

UIB as used in level L4, ACTIVE COMBI

KS as used in levels L2 (without meat probe)

PRB as used in levels L3, L4, ACTIVE COMBI
(with meat probe)

UIC as used in level L6

FSC as used in model ACTIVE COMBI

All P.c.b. cards are fitted with a "POWER FAIL" device, which stops the cooking cycle during blackouts and continues, from the point in which it was stopped, when the power is restored.

How to handle the P.c.b. cards

P.c.b. cards supplied as spare parts are wrapped in protective anti-shock and antistatic material and should be left in the protective wrapping until they are to be used.

Caution! When handling the cards, apart from the measures to be taken in view of preventing their exposure to electrostatic discharge, the **utmost care** must be taken in order to avoid mechanical damage to the cards themselves, the components and wiring which must not be bent and or stretched. Until the card has been installed correctly particular care must also be taken when handling the hermetically sealed buttons which are extremely delicate and sensitive to even light shocks which tend to bend the actuating pins (see fig.2) This precaution must also be taken when extracting and inserting the extension caps which are fitted over the pins.

Due to their high sensitivity to electronic discharge grounding straps must be worn whenever you are working with the cards or the integrated circuits. The grounding strap pincers must be attached to the framework of the oven

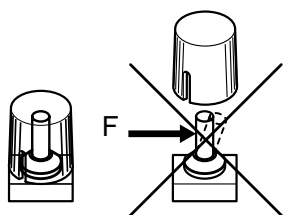


Fig. 2

which should in turn be earthed. The grounding strap is available as a spare part with the s.p.n. 02898.

REPLACING P.C.B. CARDS

MOTHER BOARD (Fig. 3)

Foreword

When replacing a mother board the following points should be taken into consideration:

- The position of the jumper "A" (fig.3) located near the transformer. This jumper must be inserted between the contacts X and Y on levels 2 and 3 and the contacts Y and Z on levels 4 to 6 and ACTIVE COMBI.
- The memory chip "C" which carries the ovens history and therefore the amount of operational hours and the operational parameters which have been personalised to the customers individual requirements by the technician.
- The microprocessor "B" where the operating parameter reference numbers are stored. The microprocessor has an individual acronym which identifies the version.
- On level 6 models an ulterior cooking program memory chip is present. This chip is mounted on the UIC card above the cooking program display. Should the POWER 2 board be replaced the cooking program memory will not be lost. If however the UIC card is replaced the memory chip will have to be recovered from the old card and mounted on the new card.

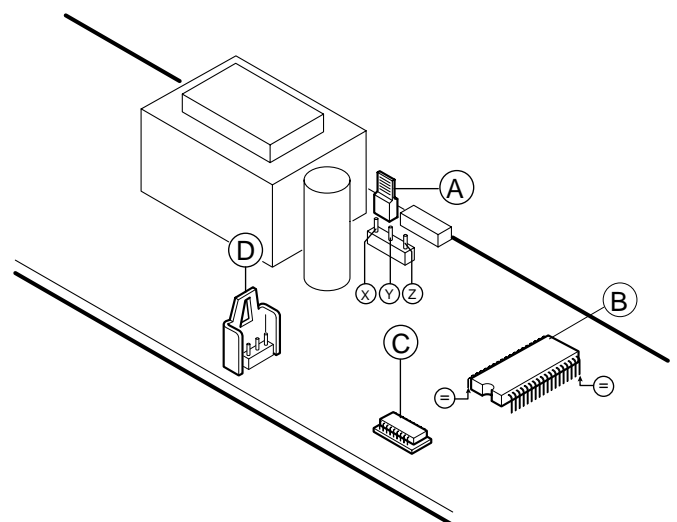


Fig. 3

Legend:

A - Jumper

B - Microprocessor

C - Memory chip

D - Computer interface connection (if required)

Replacing the mother board

Should the replacement of the mother board be necessary it is important that the parameter memory corresponds to the type of microprocessor which comes in several different versions.

- If the microprocessor version of the old mother board is the same as the new one:
- Take the memory chip off the old board and fit it on the new board.
- If you wish to use the new board without recovering either the memory chip from the old board you will have to reprogram all the user conditions by following the chapter "Parameter programming". Remember that the history of the oven will have been lost along with any of the customer's personalised parameters.

Dismantling integrated circuits (memory, microprocessors etc.)

To remove integrated circuits from their seat, insert a screwdriver into the space between the chip and its base (fig3) and lever slightly (first from one end and then from the other) in order to free the chip from its base without damaging the pins.

The direction of the microprocessor or the memory chip **must be respected** when inserting it into its base. To this end both the integrated circuit and the base are marked with a tab or a point which indicates the correct alignment. Incorrect alignment could damage both the integrated circuit and the P.c.b. card.

Function level and microprocessor compatibility table

Each card has a list of parameters specific to the type of microprocessor. This means that the number marked on the microprocessor must correspond to the number in the parameter list. It is important therefore that you conserve all parameter lists which are sent to you. It is however possible to mount a card which has the latest up to date memory chips in place of a previous generation card in this case the parameters will have to be reprogrammed. The parameter lists always carry the drawing code 599879400 or 599879400 on which the microprocessor version is also indicated. The following is a list of the various microprocessors and their compatibility.

LEVELS/Microproc. Versions	4.02	4.04	4.05	4.11	6.03
Level 2 ISG	OK	OK	OK	OK	OK
Level 3 ISG	no	no	no	OK	OK
Level 3 BOILER	OK	OK	OK	OK	OK
Level 4 BOILER	OK	OK	OK	OK	OK
Level 6 BOILER	no	no	OK/P	OK/P	OK

Example: If you attempt to fit a card, on which a 4.04 microprocessor is mounted, to a level 3 ISG oven the correct operation of the appliance cannot be guaranteed.

USER INTERFACE CARD UIA

If a user interface card UIA is to be replaced the potentiometer will have to be recalibrated by entering the parameter programming function.

DISPLAYING THE PROBE TEMPERATURE, LAMP TEST AND WATER BOILING POINT SETTINGS

In spite of the function level it is possible to display several parameters while the oven is being used by pressing the service buttons on the control panel as follows.

Service buttons

- Three buttons, which for simplicity we will call A,B and C (see fig.4), are present towards the bottom of the control panel on all versions and models and can be operated externally. In some cases the buttons are visible because they indicate functions which are to be used by the operator, in other cases however they are not visible but can be recognised by the slight bulging in the control panel membrane. In models where there are more than three buttons in this position the central button is always to be considered "B" while the buttons immediately to the left and right of the central button are always the "A" and "C" buttons respectively.
- The various functions of the service buttons are indicated on the oven chamber temperature display (fig. 4) as described below.
- The service buttons are divided into 2 major groups:
 1. - Displaying the temperature of the boiler and by pass (vapour damping temperature).
 - Lamp test
 - Water boiling point calibration

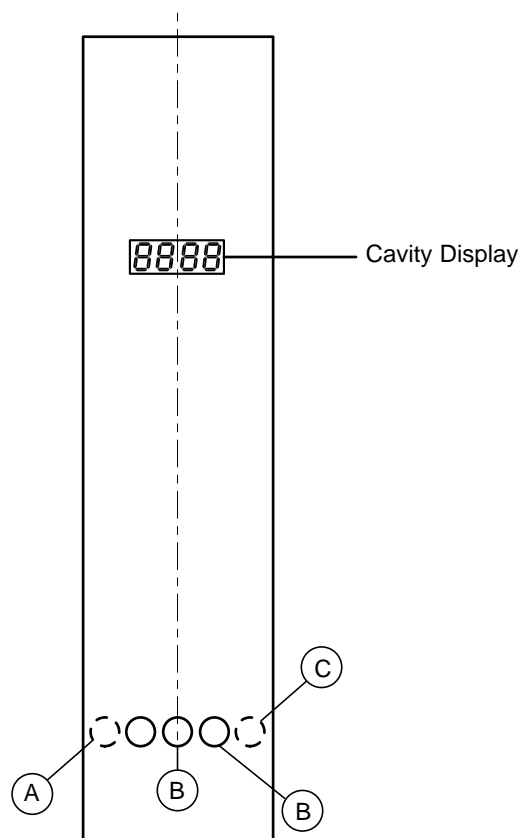


Fig. 4

A,B,C = Service buttons

2. - Normal and advanced programming parameters
 - Factory settings (default)
 - Parameter readings indicating the oven's total amount of operational hours.

DISPLAYING THE PROBE TEMPERATURE

- By pressing and holding down the two external service buttons "A" and "C", (see fig.5) the temperature inside the boiler is shown on the oven chamber temperature display. Once the buttons are released the oven chamber temperature will reappear on the display. In the ISG models the reading 0°C will appear on the display because the boiler is not present.
- By pressing and holding down the two service buttons "B" central and "C" right-hand, the by-pass probe temperature (vapour damping system) is shown on the oven chamber temperature display. Once the buttons are released the oven chamber temperature will reappear on the display.

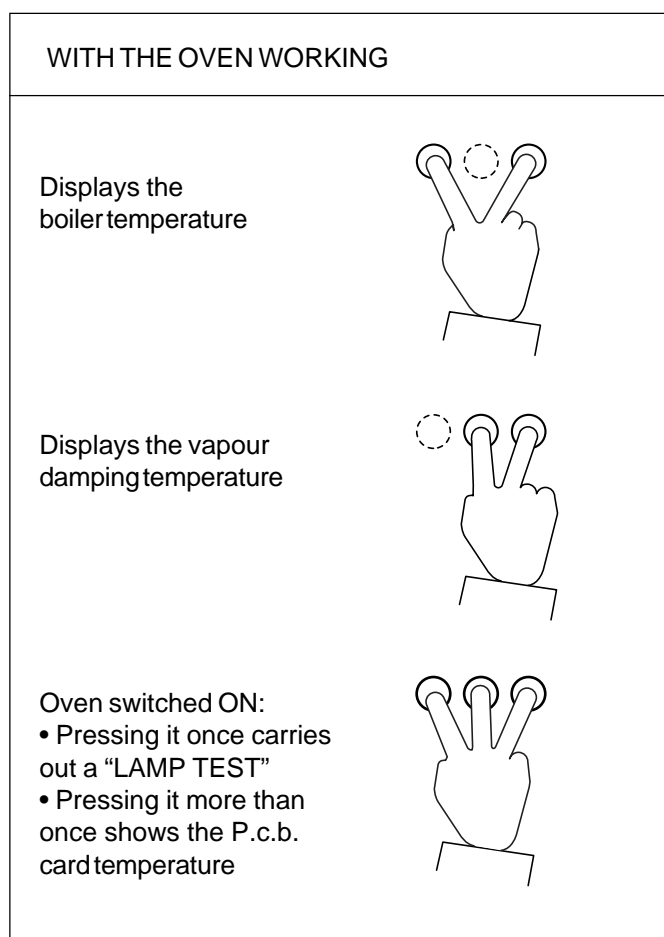


Fig. 5

LAMP TEST AND P.C.B. CARD TEMPERATURE

Pressing all three service buttons at the same time (see Fig. 5) has two effects:

a) Lamp test (valid for all microprocessors from 4.04 onwards)

The first time that all three buttons are simultaneously pressed after the oven has been switched on all the leds and

display segments will be activated. This function is called "LAMP TEST" and indicates any eventual led or display segment faults.

Note: Function levels L4 and L6 have double colour leds (red and green); in particular the 2 cooking stage leds on level four ovens and the 6 cooking stage leds on level 6 ovens have two colours. The ESC/Return and AC/Clear buttons do not light up on level six ovens.

During the LAMP TEST the double colour leds can appear with different colours.

- If the colour is yellow/orange the leds are functioning correctly
 - If the led is showing green then the red led is damaged;
 - If the led is showing red then the green led is damaged;
 - If the led is not lit then both of the colours are damaged.
- If any of the leds or segments appears damaged during the LAMP TEST the interface card will have to be replaced.

b) Displaying the P.c.b. card temperature

Pressing the three buttons simultaneously more than once will force the display to show the temperature of the mother board situated behind the control panel. This temperature reading is the one used by the controller to activate electronic component's ventilator fan when the reading is equal to or greater than the value stipulated in the parameter "SSCH" (see list of parameters)

Note: If a second LAMP TEST is required the oven will have to be switched off and on again and the three buttons will have to be pressed simultaneously.

WATER BOILING POINT SETTING

(valid for all microprocessors from 4.04 onwards)

Important note! THIS INTERVENTION MUST BE CARRIED OUT ON UNIT EITHER WITH BOILER OR ISG VERSION, when the visualization of sat steam temperature reach not 100°C.

The above mentioned conditions could be true in the following circumstances:

- After the oven has been installed at an altitude greater than 300 metres above sea level.
- When the by-pass probe has to be replaced.
- When the mother board POW 2 has to be replaced
- For any combination of the 3 previously mentioned points.

To check whether the water boiling point setting has to be altered carry out a steam cycle (100°C) with the oven chamber empty. Once the temperature in the oven chamber has stabilised the boiler should carry out from 2-4 cycles per minute. If this is not the case the water boiling point will have to be calibrated again.

Calibration procedure (see fig. 6)

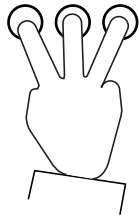
Important! This procedure must only be carried out with an empty oven chamber and with the steam relief valve closed, on level 6 this device is automatically closed.

If after having carried out a steam cycle as described above the boiler remains continuously activated or is disactivated for excessively long periods proceed as follows.

1. Switch the oven on and carry out a LAMP TEST by simultaneously pressing the buttons A,B and C.

WATER BOILING POINT CALIBRATION

Pressing for the first time after switching the oven on carries out a "LAMP TEST"



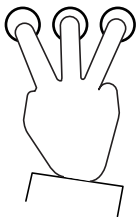
Start a steam cycle with the following buttons pressed. A continuous steam cycle will start up (one which never disactivates the heating elements)



To display the vapour damping temperature



When the temperature has stabilised simultaneously press the three buttons to memorise the new temperature value



6. With the oven working as described above, wait for the by-pass temperature to stabilise itself (this can be verified at any time by pressing the buttons "B" and "C"). This stage could take several minutes.

7. When the temperature has stabilised introduce the confirmation command by **pressing all three buttons A,B and C simultaneously**.

8. As soon as this action has been carried out the steam generator will switch off and will then cycle normally.

9. Allow the oven to work for several minutes in this way while at the same time checking the oven chamber temperature reading which should stabilise itself at the water boiling point setting. If this reading is greater or less than the correct water boiling point setting the offset parameter OFFTCEL will have to be set as described in the chapter "Parameter programming".

Note: The water boiling point temperature is practically equal to 100°C if the altitude of the installation site is between 0 and 300 metres above sea level.

If the oven is installed in a location which is greater than 300 metres above sea level the ALTSLM parameter will have to be set to an altitude equal to the installation site before carrying out the above mentioned operation (for ulterior information see parameter ALTSLM in the parameter listing).

Fig. 6

2. Wait until the boiler is pre-heated (the boiler status led on the control panel will go out).

3. Set a steam cycle (100°C) using the cycle selector or the key pad depending on the function level.

4. Press and hold down the service buttons "B" and "C" (the by-pass temperature will be shown in the oven chamber temperature display) and at the same time start the cycle by setting the timer (levels 2-3) or by pressing the "START" button (levels 4-6)

5. Release the service buttons "B" and "C" and wait for the oven to stabilise.

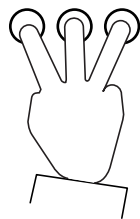
Note: The above mentioned procedure will activate a particular steam cycle which:

- never disactivates the boiler
- allows the by-pass function to reach the natural water boiling point. This temperature once established will be used and memorised by the controller to enable the correct operation of the steam cycle.

To end this procedure carry out the following points.

CONFIGURAZIONE SPILLONE MULTIPOINT (FSC)

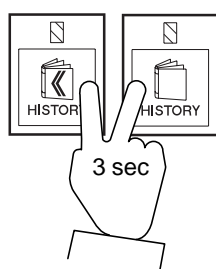
Pressing for the first time after switching the oven on carries out a "LAMP TEST"



Start a steam cycle with the following buttons pressed. A continuous steam cycle will start up (one which never deactivates the heating elements)



To display the 6 sensors temperatures of MULTIPOINT probe (FSC fig. 8)



When the 6 temperatures have stabilised simultaneously press the three buttons

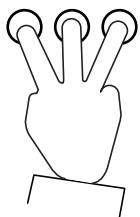


Fig. 7

PARAMETERS PART VISUALISATION FOODSAFE CONTROL (FSC)

MULTIPOINT PROBE CONFIGURATION

As this is a measuring system is mandatory to guarantee the desired precision, so is necessary to introduce an OFFSET parameter (one for each probe sensor).

1. Switch the oven on and carry out a LAMP TEST by simultaneously pressing the buttons A,B and C.
2. Wait until the boiler is pre-heated (the boiler status led on the control panel will go out).
3. Set a steam cycle (100°C) using the cycle selector or the key pad depending on the function level.
4. Press and hold down the service buttons "A" and "B" and at the same time start the cycle by pressing the "START" button.
5. Release the service buttons "A" and "B" and wait for the oven to stabilise.
6. Wait for the 6 sensors temperatures to stabilise itself of MULTIPOINT probe, by pressing simultaneously and for at least 3 seconds the buttons HISTORY<< and HISTORY the display shows the going on values of the different PT1000 sensors temperatures (fig. 8).
7. When the 6 values of temperature have stabilised by pressing all three buttons A,B and C simultaneously.
8. Switch off the oven by pressing the button START or ON/OFF.

At the end of this operation, the oven motherboard memorises the 6 PT1000 offsets.

If the offset parameters are greater than the threshold, the error EPT3 appears on the LCD and the probe temperature display (if used).

F-FACTOR VISUALISATION (fig. 8)

By pressing simultaneously and for at least 3 seconds the buttons HISTORY<<, HISTORY, and HISTORY>> the display shows the going on value of the F-factor:

$$F = x \times x \times x$$

CORE-PROBE TEMPERATURES (fig. 8)

By pressing simultaneously and for at least 3 seconds the buttons HISTORY>> and HISTORY the display shows the going on values of the different PT1000 sensors temperatures:

T:	T1	T2	T3
	T4	T5	T6

CORE-PROBE RESISTANCES (fig. 8)

By pressing simultaneously and for at least 3 seconds the buttons HISTORY>> and PRINTER the display shows the going on values of the different PT1000 sensors resistances:

R:	R1	R2	R3
	R4	R5	R6

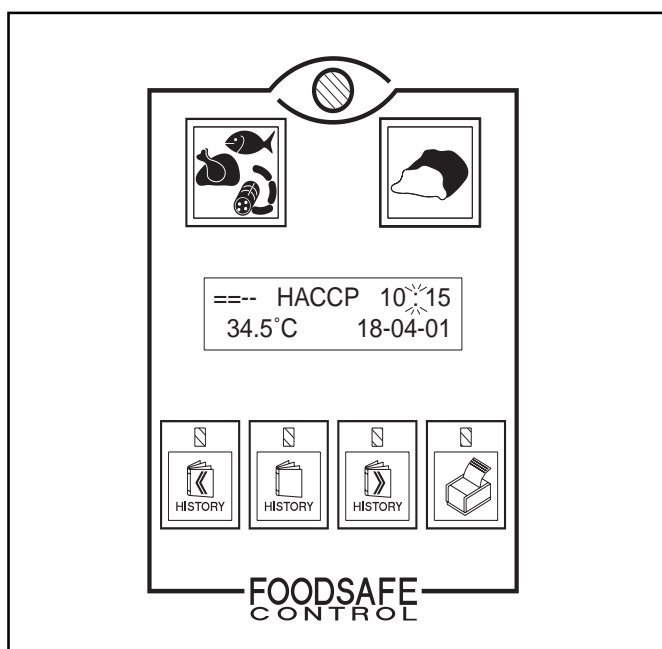
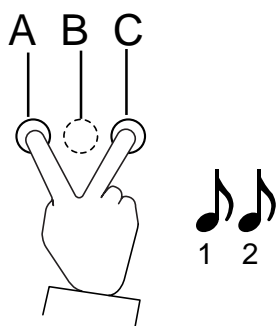


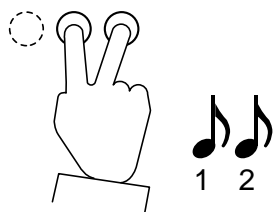
Fig. 8

DEFAULT PARAMETERS PROGRAMMING

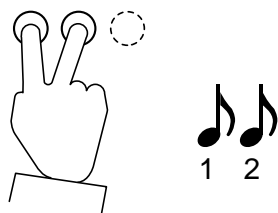
Press the external buttons. Switch the oven on and release the buttons after the second BEEP



Press until the second BEEP is heard



Wait for the second BEEP without releasing the middle button



Release the middle button after the second BEEP. The display will show "PdEF"

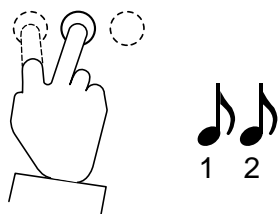
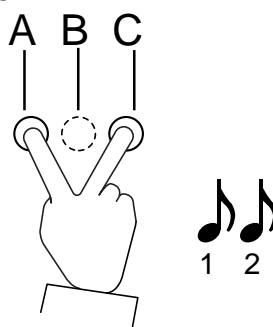


Fig. 9

NORMAL PROGRAMMING

Press the external buttons. Switch the oven on and release the buttons after the second BEEP



Press the central button until the second BEEP is heard

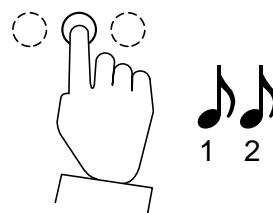


Fig. 10

PARAMETER PROGRAMMING

When the mother board is replaced without recovering the microprocessor from the previous board the following operations will have to be carried out:

- load the default parameters;
- enter the normal or advanced programming mode to modify some of the default parameters depending on the oven function level and the power supply;
- reset the oven chamber temperature potentiometer (only for function levels 2-3 which use a potentiometer, (UIA p.c.board) see relative calibration paragraph).

PROGRAMMING DEFAULTS (fig.9)

To program the default parameters the service buttons and the buzzer are used.

1. With the oven off press and hold down the external service buttons "A" and "C"; switch on the oven by turning the switch for levels 2 and 3 or by pressing the ON-OFF button for levels 4 to 6. At the moment the oven is switched on the buzzer will emit 1 BEEP. Wait for the oven to emit a second BEEP and then release the buttons.
2. Press and hold down the buttons "B" and "C". The oven will emit 1 BEEP. Keep the two buttons held down and wait for the second BEEP.
3. Press and hold down the buttons "A" and "B". The oven will emit 1 BEEP. Keep the buttons pressed down until the second BEEP is heard at this point release button "A".
4. Release button "A" and the buzzer will emit 1 BEEP. Keep button "B" pressed until the second BEEP is heard. When the button is released the oven chamber temperature display will briefly show "PdEF" indicating that the operation is over.

NORMAL PROGRAMMING (fig.10)

Make sure that you have the parameter list relative to the microprocessor mounted on your mother board and carry out the following operations in sequence.

1. With the oven off press and hold down the external service buttons "A" and "C" and switch on the oven. At the moment the oven is switched on the buzzer will emit 1 BEEP. Wait for the oven to emit a second BEEP and then release the buttons.

2. Press and hold down the central button "B". The oven will emit 1 BEEP. Keep the button held down and wait for the second BEEP. When the button is released the oven chamber temperature display will show the number of the first parameter "P1" flashing.

At this point the three buttons A,B and C have the following functions:

- Button "B" allows you to switch between the non flashing parameter number indicated on the oven chamber temperature display (the letter "P—" followed by a number) and the flashing value of that same parameter indicated on the oven chamber temperature display without the letter "P" and vice versa; pressing button "B" again will allow you to switch from the flashing number to the non flashing letter "P—"

followed by the number which will then be memorised.

- The buttons “A” and “C” will allow you to increase or decrease the number shown on the display.

3. To check if the flashing number corresponds to the one in the list proceed as follows:

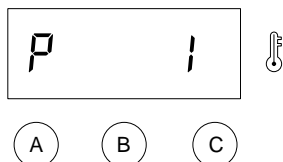
- If the number corresponds confirm it by pressing the central button “B” again. When the button is released the memorised parameter will appear on the display.
- If the number doesn’t correspond press button “A” to decrease the value or press button “C” to increase the value until the desired number appears on the display. Press button “B” to confirm the parameter.

4. Using the buttons “A” and “C” pass through all the over parameters which are to be modified remembering to press the central button to memorise the choice.

5. To exit the programming mode switch off the oven.

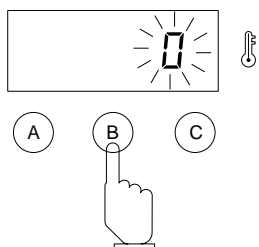
Example:

With a level 3, 10 grid gas oven in which a new mother board has been fitted and the default parameters have already been set. By following points 1 and 2 the display will show **parameter P1** (not flashing); At this point proceed as follows:

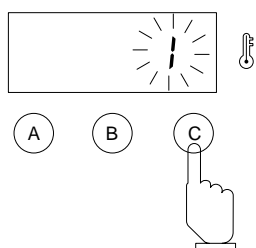


a) Press the central button “B” and the value of the parameter “0” will appear on the display (flashing).

From the parameter table we can see that the default value “0” has to be changed to the value “1”



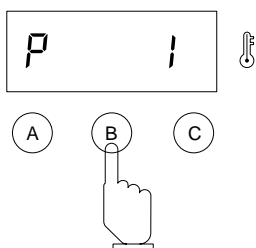
b) Use button “C” to increase the value from “0” to “1”.



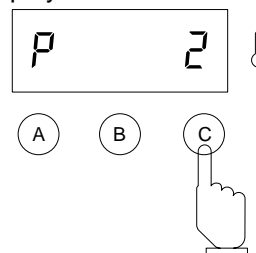
c) Once the desired value has been set press the central button “B” to return to the parameter button.

In this case “P1” (not flashing)

This action will confirm the modification of the parameter in question.



d) Following the data in the parameter table modify all the parameters which have values different to the default values by pressing the buttons “A” or “C” to increase or decrease the displayed value.



Note: If after having modified the value of a particular parameter (see point b) the oven is switched off without proceeding with point “c” the parameters will not have been modified.

Using the parameter tables

The information indicating which parameters are to be modified is given in the table 5958 79400 or 594804500 which can be found at the end of this manual. Once you have verified that the microprocessor version corresponds to the relative parameter table begin modifying **only** those parameters which have a value which is different from the default value shown in the table. This means that when a number is indicated in the cell this is the correct value for the parameter of the type and level of oven in question. When the cell is empty the default value is correct and does not therefore have to be modified.

EXAMPLE:

With a level 6 and 10 grid electric oven with a 4.11 microprocessor the default values to modify are as follows:

Nr.	Parameter	Default	Change
4	Livello-E2P	3	from 3 to 6
5	ABMFLP	0	from 0 to 1
28	OFFTCEL	0	Note (*)
49	MSCELOFF	27	from 27 to 20

Not modify the advanced programming parameters.

Note(*): Carry out the water boiling point setting procedure.

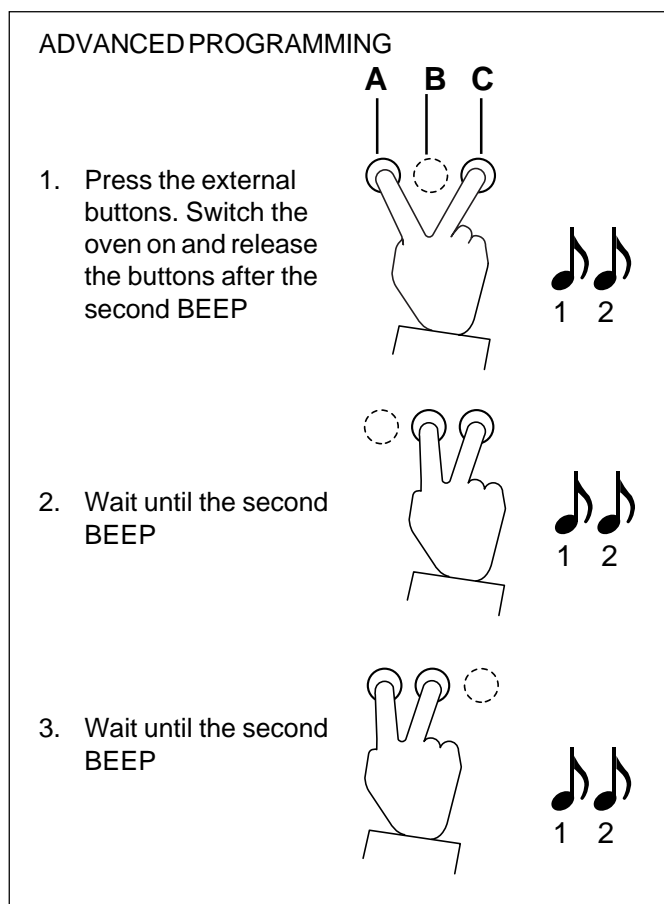


Fig.11

ADVANCED PROGRAMMING (fig.11)

In some cases the advanced programming parameters have the correct default values and are therefore not to be modified. To enter the program mode proceed as follows:

1. With the oven off press and hold down the external service buttons "A" and "C" and switch on the oven. At the moment the oven is switched on the buzzer will emit 1 BEEP. Wait for the oven to emit a second BEEP and then release the buttons.

2. Press and hold down the buttons "B" and "C". The oven will emit 1 BEEP. Keep the two buttons held down and wait for the second BEEP.

3. Press and hold down the buttons "A" and "B". The oven will emit 1 BEEP. Keep the buttons pressed down until the second BEEP is heard. After the buttons are released the number corresponding to the first parameter "P1" (flashing) will appear on the oven chamber temperature display.

4. Proceed as described in points 3 and 4 of the normal programming procedure passing straight to the advanced parameter numbers which are to be modified.

5. To exit the programming mode switch off the oven.

SETTING "NOTE2" (P28 - OFFTCEL PARAMETER)

The calibration of the oven chamber temperature is carried out using the parameter "OFFTCEL". This parameter is set in the factory while the appliance is being tested. To verify the "OFFTCEL" parameter setting the sat steam cycle is used until the temperature in the oven chamber has

stabilised, see "water boiling point setting" paragraph. At this point the parameter has to be modified in relation to the sat steam stabilized temperature value obtained and 100°C. Example:

Oven with boiler-sat steam cycle- oven chamber temperature stabilised at 98°C, default value = 0°C, installation site altitude is less than 300 metres above sea level.

1. The default OFFTCEL value should be modified from 0 to 2°C.

2. Switch on the oven again and the oven temperature level will be correct ($98^{\circ} + 2^{\circ} = 100^{\circ}\text{C}$).

The correct setting of this parameter is to be verified each time the following components are replaced:

- the oven chamber temperature probe,
- the mother board POW 2.

Note: If the oven is installed in a location where the altitude is greater than 300 metres above sea level the following actions must be taken before calibrating the OFFTCEL parameter:

- 1) Correct the altitude parameter "ALTSLM".
- 2) If the POWER board or the by-pass probe has been replaced the water boiling point setting will have to be calibrated.

SETTING "NOTE1": ADJUSTING THE OVEN CHAMBER TEMPERATURE POTENTIOMETER (R-TARPOT PARAMETER)

If the potentiometer on the UIA card has become old and therefore erratic or the card has been replaced the temperature shown on the display may not correspond to the temperature set on the temperature setting knob. In this case the "R-TARPOT" parameter will have to be altered in order to align the two values. These parameters are used in function levels which require the use of a potentiometer to set the oven temperature level. As all potentiometers differ from each other the controller requires these parameters in order to establish the resistance of the potentiometer in several different points on the temperature scale.

These are respectively:

P30 -50°C for R-TARPOT 0

P31 -100 °C for R-TARPOT 1

P32 -200 °C for R-TARPOT 2

P33 -300 °C for R-TARPOT 3

To set these parameters proceed as follows:

1. Rotate the potentiometer knob to the value which corresponds to 50°C.
2. Select the parameter P30 -R-TARPOT 0.
3. Press and release the central service button "B". The buzzer will emit 1 BEEP and the default value will flash on the display.
4. Press either of the external service buttons "A" or "C" for 2 or 3 seconds. The controller will automatically measure the resistance of the potentiometer in that point on the scale and assign the value 50°C.
5. Press the central service button "B" to memorise the parameter.
6. Repeat points 1 to 5 for each of the values to be set: P31 at 100°C, P32 at 200°C and P33 at 300°C.

THE HOUR COUNTER PARAMETER

The following parameters with the default value "0" function as hour counters:

P25 - hCNV

P26 - hVAP

P27 - hMIX

These represent respectively the number of operational hours for the oven in the convection cycle (hCNV), steam and thermostatically controlled steam (hVAP), combined and regeneration (hMIX). The combined total of these

parameters equals the total operational hours of the appliance.

They will show zero if the oven is new or the preset parameters have been reloaded. These parameters are read only, if you attempt to modify them they will be zeroed. Important: In order to create a statistics data base regarding the reliability of the appliances and their internal components it is **important that these parameters (hCNV+hVAP+hMIX) be noted on the after sales service reports.**

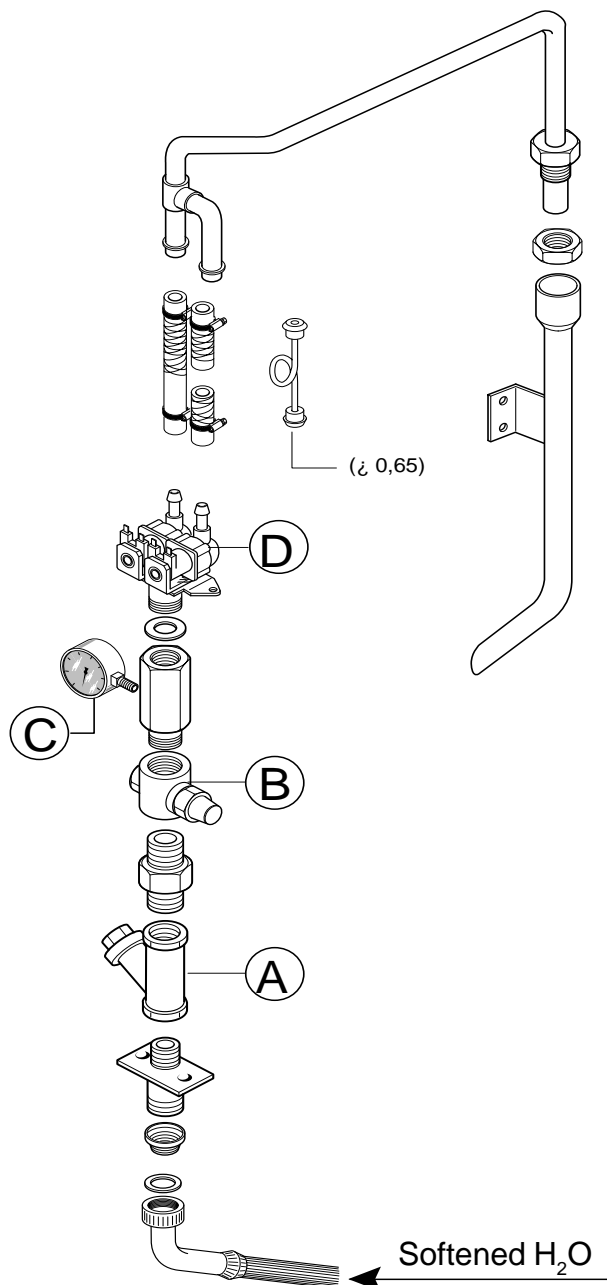


Fig. 12

- A - Water filter
- B - Pressure regulator
- C - Pressure gauge
- D - Solenoid valve

STEAM/CONVECTION SECTION

INSTANT STEAM GENERATION CIRCUIT (ISG)

The instant steam generation circuit consists of (fig. 12)

- a gas or electric heating unit
- a water pressure regulator
- a water pressure gauge
- one solenoid valve assembly with one inlet and two outlets; The solenoid valve with the greatest capacity is used in the steam cycle and the other valve, with an inferior capacity, is used in the mixed cycle.

To gain access to the steam circuit components remove the left-hand side panel from the appliance.

Regulating and testing the steam cycle

For the appliance to function correctly during the steam cycle the water supply pressure (1,2 bar) must be adjusted during the installation.

To regulate the pressure carry out the following actions in sequence and with the door closed:

- switch on the power at the mains;
- open the gas and water cut off cocks;
- close the oven chamber steam relief valve;
- turn the cycle selector to the 100°C steam position;
- ignite the pilot burner (only for models with manual ignition);
- set a cooking cycle time of at least 10 minutes

- At this point check the following:
 - that the oven chamber ventilator fan works;
 - that the heating elements function correctly;
 - that water is being let into the oven chamber and that only the solenoid with the greatest capacity is functioning;
 - that the pressure gauge indicates a water pressure of 1,2 bar; if this is not the case use the setting screw on the pressure regulator to adjust the pressure;
 - that even when the burner is off water is still being let into the oven chamber.

- Also check the following:
 - that when steam is being produced the solenoid valve controlling the vapour damping system is functioning;
 - that when temperature in the oven chamber has stabilised the value on the display is between 98° and 101°C.
- Finally pass over to the "mixed cycle" (by setting a temperature of 150°C in the oven chamber) and check that water is being let into the oven chamber via the solenoid valve with the least capacity.

GAS INSTALLATIONS WITH AIR BLOWN BURNERS

The gas circuit is made up of the following components:

- a "TANDEM" gas solenoid valve unit consisting of:
 - a safety solenoid valve which remains open during the entire operating time;
 - a second solenoid valve (normally closed) which only opens when a heating command is received, thus allowing the passage of the gas to the burners;
 - a third device which permits the partial closing of the gas solenoid valve in order to reduce the gas flow during operation, thus reducing the power to 70% with respect to the nominal operating capacity. This device is only activated during cooking cycles using reduced power.
- a heat exchange burner
- a heat exchanger. The oven chamber heat exchanger consists of a spiral shaped corrugated tube which wraps around the oven chamber ventilator fan. The heat exchanger is connected at one end to the burner and the other end opens directly in to the ambient atmosphere;
- a ventilator fan for the air blown burner;
- an air pressure switch which guarantees the correct pressure inside the burner before allowing ignition;
- one or two spark plugs and flame detection devices;
- a gas pressure switch which cuts off the gas flow in case of insufficient pressure. This intervention is indicated by the oven chamber light switching off;
- an electronic ignition and flame control device (controller).

IGNITING THE BURNER

When a cooking cycle is started the flame control device is activated which in turn activates the heating circuit in various stages as follows:

1) Air pressure switch check

The controller sends an impulse to the air pressure switch which has normally open contacts. If the circuit is functional the ventilation stage is activated. If the pressure switch circuit is damaged neither the ventilation nor the ignition stages are activated.

2) Ventilation stage

The controller activates the ventilator fan which after a few seconds activates the pressure switch moving its contacts from open to closed and this in turn allows the wash stage to begin. If the circuit isn't functioning due to ventilator or pressure switch failure the controller will continue to allow the ventilators to work without moving on to the successive stage.

3) Wash stage

The ventilator lets air into the heat exchanger for about 10 seconds in order to realise the correct pressure and at the same time eliminate any eventual traces of gas or fumes. At the end of the wash stage the controller allows the ignition stage to begin.

4) Ignition stage

Ten seconds after the wash stage has started the controller simultaneously enables the ignition of the spark plug (by

sending a 15,000V charge) allows gas to be fed to the valve and activates the flame detector. At this point two situations are possible:

a) The flame ignites correctly and is detected. This is the normal functioning condition which is followed by maintaining continuous combustion at the burner, by the flame detection and consequent spark plug disactivation (once ignition has taken place the charge at the spark plug is reduced to 200V)

b) The flame does not light up, or it lights up but is not detected. In this case the controller will continue to supply the gas valve and activate the ignition and detection devices for a safety period of 5 seconds.

If during this period the flame does not light or is still not detected the controller will switch everything off and activate the burner block condition which is indicated by the lighting up of the luminous buttons "EC" or "RB" (oven chamber reset or boiler reset). At this point, and after having eliminated the cause of the blockage (see chapter "trouble shooting", pressing the reset button "RC" or "RB" will force the controller to start again from point 1.

Note: Should the spark plugs be replaced it is extremely important that they be positioned as shown in figures 11a for the boiler and 11b for the oven chamber.

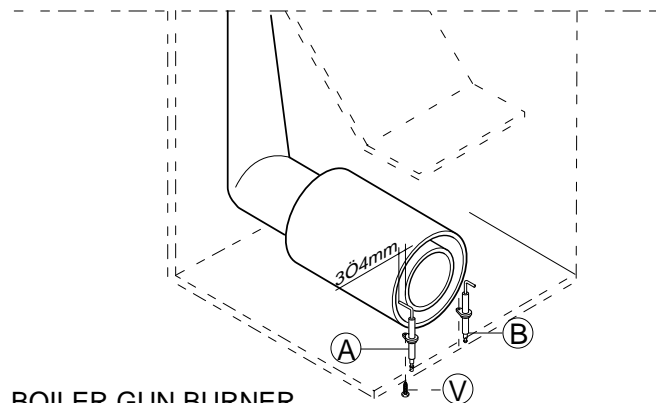


Fig.13a

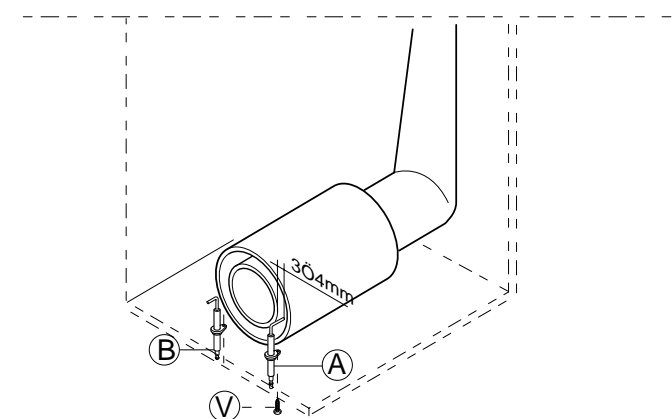


Fig.13b

TROUBLE SHOOTING GUIDE

The following is a list of possible anomalies which could occur during the lifetime of the appliance. The probable causes and possible solutions required to reset the appliance are listed below. The trouble shooting guide is divided in two sections.

- I Electronic section with autodiagnosics and alarm signals shown on the oven display.
- II Steam convection section.

I ELECTRONIC SECTION

1. Diagnostics indicated on the displays

Some of the most significant anomalies are shown on the oven chamber temperature display and meat probe temperature display by means of error codes.

a) Error codes indicated on the oven temperature display

EPt1 - Oven chamber probe (located internally at the centre of the left-hand oven chamber wall), interrupted or in short circuit.

EPt2 - Boiler probe (situated within the heating element assembly interrupted or in short circuit (ignored in ISG ovens and present in all ovens with a boiler).

EPt4 - Bypass probe located on the piping which joins the rear part of the oven chamber (below the motor) and the drainage collector, interrupted or in short circuit.

EPt7 - Oven chamber temperature setting potentiometer is damaged (only on levels 2 and 3 with the p.c.b card UIA)

EPt8 - Damaged temperature sensor for the electronic components

ESCH - Electronic control circuit cooling device malfunctioning.

Etuc - Oven chamber temperature limit switch activated (320°C) (on all ovens).

Etub - Boiler temperature limit switch activated (180°C) (not in ISG models).

EFLP - Oven chamber motorised drainage valve failure (only level 6)

b) Error codes indicated on the meat probe temperature display (when the meat probe is present)

EPt3 - Meat probe interrupted or in short circuit.

b) Error codes indicating incorrect parameter settings (together with the parameter number)

If the controller detects one or more parameters which have values not permitting the minimum operational requirements an error code will appear on the oven chamber temperature display; "E—" followed by the parameter number.

- Solution:

Enter the parameter programming mode (normal or ad-

vanced dependent on which number appears) and set the correct value as taken from the list of parameters.

Example:

This situation would occur after programming the default parameters on a level 4 or 6 oven when parameter n° 4 (livello-E2P) assumes the default value of 3. As such a value is incompatible with the user interface cards UIB and UIC when the oven is switched on the error code "E4" will appear on the display indicating that the set parameter does not satisfy even minimum operational requirements of the oven. To avoid this problem the value 5 (for Level 4 ovens or 6 (for level 6 ovens) should be inserted as stipulated in the parameter tables.

d) The display readings are erratic

- The probes are shorting out (going to ground)
 - Use a multimeter to check that the probe wires are not shorting out.
- The use interface card could be damaged or the POWER card (more probable)
 - Replace the damaged interface card; if the defect persists substitute the POWER board and replace the previously removed interface card.

e) The oven chamber temperature readings are erratic

- The card's electronic controller is defective
- The oven chamber temperature probe is defective or interrupted, see error condition EPt1.

2. ERROR SITUATIONS (FSC)

EEPROM or RTC error

With this type of error, on the LCD is displayed a warning message (only in the idle status) while the user can continue work without the possibility to memorise the activity results. The HACCP FSC evaluation is made as usual and displayed on the FSC user interface.

==-- HACCP
EEPROM fault

==-- HACCP
RTC fault

EEPROM data corruption

In that case looking the Events history, only valid records are displayed, the damaged ones are skipped.

5.13.3 Power failure

If there is a power failure during the cooking activity, on the standard oven, there is already an Oven Power Fail recover procedure.

If the blackout time is less than 30 minutes the oven remember the cooking parameters. In that case, if the delta temperature between cavity and set is less than 40°C than the oven automatically continues cooking, otherwise it waits for the continue command.

If the oven is equipped with the FSC, some additional conditions are requested before the appliance continue the

cooking and validating procedure:

- core temperature before blackout
>HACCP_TPRB_THR (parameter 115, def.=50°C)
- core temperature after blackout
>HACCP_TPRB_THR (parameter 115, def.=50°C)
- cavity temperature after blackout
>HACCP_SCEL_THR (parameter 116, def.=65°C)

If these conditions are not verified, the FSC validation result is "not OK" while the oven continues cooking.

COMMUNICATION ERRORS

If there is no connection between the H-PRB interface and the POWER board, on the display of the H-UI appears the blinking message:

==-- HACCP
communication

5.13.5 Probe errors

If 1 sensor in the probe is damaged, the system displays the standard message EPT3 on the probe temperature display of the oven's user interface and the following on the LCD:

==-- HACCP hh:mm
EPT3 dd-MM-yy

This error disables the FSC functionality.

II STEAM CONVECTION SECTION

1. Gas models 10-20 grid (FCV/G 10/20)

a) The oven doesn't light up.

- Fuse F1 has intervened due to the motor overheating.
- Fuse F2 has intervened due to auxiliary circuit component damage.

b) The flame doesn't light.

- Air is present inside the gas piping (if the installation is new repeat the ignition sequence several times).
- Ignition sparkplug is damaged or badly positioned.
- The ignition wiring is going to ground or is too near metal parts or the oven chamber aluminium insulation.
- The boiler or oven chamber temperature limit switch has cut in therefore disactivating the second coil of the gas solenoid valve.
- Insufficient gas pressure (especially in levels 4 to 6 working at low power).
- Gas pressure switch has intervened indicated by the oven chamber light switching off.
- Defective gas solenoid valve
- Inefficient burner ventilation
- Air pressure switch calibration is wrong (the air pressure in the combustion chamber is less than 2 mbar).
- The flame control device is damaged
- The oven chamber thermostat probe is damaged showing error condition Ept1.

c) The flame goes out

(The flame is ignited but not detected)

- The electrical connection is incorrect. The live and neutral wires have been inverted.
- The combustion chamber burner assembly is not correctly grounded.
- The appliance is incorrectly grounded
- The flame detection device is damaged or badly positioned.
- The flame control device is damaged
- There has been a drop in pressure and the gas pressure switch has intervened.
- The gas valve is defective.
- The burner ventilator is damaged (block situation).

DESCRIPTION OF THE P.C.B PARAMETERS ACCORDING TO THE DIFFERENT LEVELS

The program stored in the microprocessor of the controller unit is designed to cover the whole extension of operational and control requirements of the whole family of forced-convection ovens/steamers FCV 6-10-20. Each type of oven, differing for its functional level, capacity, supply energy, etc., has its own particular list of parameters.

There are 2 types of parameters, ie.:

1. normal parameters and
2. advanced parameters.

Note: Parameters are listed in their alphabetical order below.

Code reading key:

Acronym, unit of measure, factory-side setting (default), description of function.

1. NORMAL PROGRAMMING PARAMETERS

ABMFLP - 0

Parameter enabling motor-driven oven cavity venting. It governs the actuation of and the diagnostics concerning the automatic oven cavity venting device.

Set to 0 in ovens with manual oven cavity venting, to 1 in ovens with motor-actuated cavity venting.

ALTSLM m 0

Altitude above sea-level (s.l.m.). This parameter is only provided to automatically rectify the temperature value being read on the display in the steaming cycle in accordance with the actual altitude above sea-level of the site in which the oven is installed. Such a parameter can be modified both in ISG ovens and ovens with own boiler, and has a visible effect in the oven (ie. values differing from 100 °C) only if the altitude exceeds 300 m above sea-level.

DEFSCNV °C 150

Temperature pre-setting for normal forced-convection cycle. This parameter expresses the temperature value which the operator reads on the display when setting the oven cavity temperature in the hot-air cycle. It is operative in functional levels 4 and 6 only (the other levels are provided with a potentiometer).

DEFSCNVF °C 150

Temperature pre-setting for forced-convection cycle with automatic cavity venting facility. This parameter expresses the temperature value which the operator reads on the display when setting the oven cavity temperature in the hot-air cycle. It is operative in functional levels 6 only.

DEFSMIX °C 150

Temperature pre-setting for the combined forced-convection/steam cycle. This parameter expresses the temperature value which the operator reads on the display

when setting the oven cavity temperature in the combined hot-air/steam cycle. It is operative in functional levels 4 and 6 only.

DEFSRIG °C 140

Temperature pre-setting for the reconstitution cycle. This parameter expresses the temperature value which the operator reads on the display when setting the oven cavity temperature in the reconstitution cycle. It is operative in functional levels 4 and 6 only.

DEFSVTR °C 85

Temperature pre-setting for thermostatically controlled steaming cycle. This parameter expresses the temperature value which the operator reads on the display when setting the oven cavity temperature in the thermostatically controlled steaming cycle. Its operative in functional levels 4 and 6 only.

DSFSPRB °C 50

This parameter expresses the temperature value which is displayed when the operator uses the core-temperature probe.

DSIMIX °C 300 °C

Intermediate by-pass temperature in combined hot-air/steam cycles for ovens with boiler.

Such a parameter is deactivated since at a temperature of 300 °C the controller will ignore it. It serves the purpose of enabling the moisture level in the cooking cavity to be increased during combined hot-air/steam cycles in ovens with boiler. Should the operator have or develop particular needs, it is recommended that the central Service organization be contacted in view of a possible modification (if the value is reduced down to its lowest setting of 50 °C, the moisture degree in the cavity will increase accordingly).

DSIRIG °C 30 °C

Intermediate by-pass temperature in combined cycles for ISG ovens for reconstitution processes.

DTCELOFF - 2

This parameter has no unit of measure. It has been derived experimentally and is used by the controller for an "INTELLIGENT" oven cavity temperature control. In order to set it correctly, it is important that the indications in the parameter prospect be strictly adhered to in accordance with the particular type of oven. Even a quite slight modification can in fact fully derange the oven cavity temperature control.

FLABHUMN - 1

Parameter enabling manual humidification function. In models provided with a humidifier, incl. ISG models, it enables (if set at "1") or inhibits (if set at "0") the injection of water in the oven cavity when the corresponding push-button located on the control panel is actuated. When enabled, it allows water to be injected in the cavity regardless of the temperature value prevailing therein, or the oven door being open or closed, provided that the oven fan is operating.

FLDISPAP - 0

It enables, if set at "0", or inhibits, if set at "1", the function of the door interlock microswitch in following cycles: hot-air, hot-air with cavity venting open (level 6 only) and combined hot-air/steam. The need for this parameter to be set at "1" could be felt by the cook who, when on duty, generally happens to open the door quite frequently in order to put dishes in the oven force-heating. Such an operation might make it impossible to keep the temperature in the oven cavity at the desired value. This drawback is much more apparent in gas-heated models with fan-assisted burner, in which, owing to the required burner ventilation time, the burner could practically fail to get ever ignited.

Important! In the case that this parameter is set at "1", it is necessary that the user be duly cautioned against the risks that may be incurred when opening the door owing to overheated steam bursting out there through.

Note: The above described function is always present and cannot be modified in reconstitution cycles only, since these operate anyway even with open oven door (see note in the user manual).

FL-FAHR °C/°F 0

This parameter causes the display to visualize temperatures according to the unit of measure selected. Range 0 to 1. Set at 0 for °C, at 1 for °F. Even if set at 1 (°F), all temperature parameters will anyway keep being displayed in °C. That is, Fahrenheit degrees will be visualized on the display for the user only.

FL-GAS - 0

This parameter pre-sets oven operation according to the type of supply energy. Range 0 to 1. Set at 0 if it is an electric oven, at 1 if it is a gas oven.

FL-ISG - 0

Parameter for ISG ovens (without boiler. It pre-sets oven operation according to the type of steam generation. Range: 0 to 1. Set at 0 if the oven has a steam-generator boiler, at 1 if the oven has an instant steam generation (ISG) facility.

FLNMODPRG - 0

Only active in level-6 ovens.

If set at "0", it enables the cooking programme to be temporarily modified even during automatic operation. If set at "1", it does not enable any temporary modifications to a cooking programme to be made during automatic operation. In both cases, however, a cooking programme can always be modified if the operation mode is manual.

hCNV hr 0
hVAP hr 0
hMIX hr 0

Oven hour-counter (totalizer). It indicates "0" if the oven is new or if factory preset parameters have been reloaded. These represent respectively the number of operational hours for the oven in the convection cycle (hCNV), steam and thermostatically controlled steam (hVAP), combined and regeneration (hMIX). The combined total of these parameters equals the total operational hours of the appliance.

hHBOL hr 0

Automatic-discharge boiler operation hour-counter. It is operative in the models provided with motor-actuated boiler discharge. In this hour-counter, the controller will automatically update the number of hours of operation so as to perform the automatic boiler discharge sequence. Such a parameter can only be made visible, but cannot be modified. At the end of each automatic boiler discharge operation, the controller will automatically revert the hour-counter to zero (see parameter hHBOLMX for more details).

hHBOLMX hr 8

Setting of hour-counter and automatic boiler discharge. Operative in levels with motor-actuated boiler discharge facility only. Such a parameter expresses the value, in hours, which is totalized automatically by the oven on the parameter hHBOL during its operation. When the parameter hHBOL reaches the value of hHBOLMX (8 hours), the oven will automatically discharge the boiler only in the case that the temperature of the water is lower than or equal to the value expressed by TSCBAMX (50°C).

ISCELON - 2

See explanation given in connection with the parameter

ISPRB °C 40

Hysteresis of core-temperature probe for restarting the cooking process. It expresses the cavity temperature value to which the core-temperature probe shall decrease with respect to the SET value in order to cause the cooking process to be restarted automatically. Example: With the parameter set at 40 °C and a temperature of the core-temperature probe set at 90 °C, the oven heating is switched or turned off when the probe reaches 90 °C and is switched or turned on again automatically when the same temperature goes down to 90-40 °C = 50 °C. Such a parameter can be modified, by for instance changing it from 40°C to 1 °C in the case a food cooked using the core-temperature probe were to be maintained indefinitely at the probe temperature.

ISRIG °C 120

Hysteresis of the reconstitution cycle.

The reconstitution cycle (in the models provided with boiler) has two operating phases, ie.:

X) Temperature rise phase with an alternating operation of the boiler and the oven cavity (see parameters sRIGBOL and sRIGCEL).

Y) Actual reconstitution phase with both boiler and oven cavity operating at the same time.

This parameter defines the temperature drop in the oven cavity, as caused by the opening of the door, below which there is the transition from the X mode to the Y, and vice-versa.

LIVELLO-E2P - 3

Parameter for functional level. It pre-sets the operation of the controller according to functional level and the type of control panel used on the oven. Set at:

- 2 on ISG ovens with functional level L2

- 1 on ISG ovens with functional level L3

- 3 on boiler ovens with functional level L3

- 5 on boiler ovens with functional level L4
- 6 on boiler ovens with functional level L6

mAXDUR min 480' (8 hours)

Longest time that can be pre-set for each phase of the cooking process. It expresses the longest possible duration of a time-controlled cooking phase, if the continuous operation mode is not considered. It is operative in the levels that are provided with electronic timer (L4, L6). In the case of a cooking cycle including a plurality of distinct phases, such a value can be pre-set for each single phase. If a cooking time is set which is in excess of mAXDUR, this brings about an automatic switch-over to the continuous operation mode, as indicated by the wording CONT on the display.

MSCELOFF - 27

See explanation given under DTCELOFF.

OFFTCEL °C 0

Parameter for rectifying the oven cavity temperature reading. This parameter is set in the factory while the appliance is being tested. To verify the "OFFTCEL" parameter setting in ovens with a boiler the steam cycle is used until the temperature in the oven chamber has stabilised. At this point the parameter is to be modified until the value shown on the oven temperature display equals the stable water boiling point temperature. Refer to the chapter "parameter programming" to correct this parameter.

PSCELON

See explanations given under DTCELOFF.

R-TARPOT0 ohm pre-set: factory calibration

R-TARPOT1 ohm pre-set: factory calibration

R-TARPOT2 ohm pre-set: factory calibration

R-TARPOT3 ohm pre-set: factory calibration

These parameters cannot be modified manually are used in function levels which require the use of a potentiometer to set the oven temperature level. As all potentiometers differ from each other the controller requires these parameters in order to establish the resistance of the potentiometer in several different points on the temperature scale. Refer to the chapter "parameter programming" to correct these parameters.

sC-HON sec 5

sC-HOFF sec 25

These parameters respectively express the duration of the switch-on (SC-HON) and pause or switch-off (SC-HOFF) phases of the oven cavity fan operation in COOK&HOLD cycles (where provided). They are operative only in the case that the temperature in the oven cavity is higher than or equal to the set value. Below this value, the intermittent operation of the fan is excluded.

SEBLFUM °C 100

Water boiling temperature. Such a parameter expresses the value of the water boiling temperature as measured by the by-pass probe. It can be modified in any of the following two ways:

- 1) manually, during the parameter programming procedure;
- or

- 2) automatically, by carrying out the calibration or adjustment of the fume boiling temperature.

Such a temperature is important in view of enabling the control of both the steam generator and the fume condenser in steaming, combined and reconstitution cycles (in ovens with steam generator only). It shall be readjusted in the case that the oven is installed at any higher altitude than 300 meters above sea-level or- after having checked the steaming cycle at 100°C for correct operation - in the case that the master board and/or the by-pass probe have been replaced.

No need for readjusting such temperature arises in either cases in ISG ovens.

sF1CLN sec 300 (5 min.)

Duration of phase 1 of the "CLEAN" cycle. The time indicated by this parameter starts upon reaching the oven cavity temperature which is expressed by the parameter TENDCLN.

sF1CLN sec 600 (10 min.)

Duration of phase 2 of the "CLEAN" cycle. This is the phase during which the "CLEAN" cycle completes its oven cavity cleaning action by using a steaming cycle having the duration which is expressed by this parameter. This second phase starts automatically at the end of the pause phase. Upon conclusion of the phase 2, the LED of the "CLEAN" push-button goes off, while the sound alarm of the oven is activated to call the attention of the operator on the necessity of thoroughly rinsing the oven cavity with fresh clean water.

SFUMBOL °C 80

Fume condenser activation temperature in cycles that make use of steam generation (both ISG and separate boiler). It is the temperature value that is measured in the by-pass, above which the electromagnetic fume-condensation valve is activated in the following cycles:

- steam only
- thermostatically controlled steaming (where provided)
- combined hot-air/steam
- reconstitution (where provided).

Anyway, the switching on of the fume condensing facility in these cycles occurs at the same time as the steam injection periods. Example:

- by-pass temperature lower than 80 °C, fume condenser steadily OFF;
- by-pass temperature higher than or equal to 80 °C: fume condenser ON.

SFUMCNV °C 90

Fume condenser switching-on temperature in hot-air cycles. This is the temperature value, as measured in the by-pass, above which the electromagnetic fume-condenser valve is activated in hot-air cycles and hot-air cycles with automatic discharge (L6) only.

sFUMMX sec 2

Fume condenser switching-on delay. When the controller identifies the need for the fume condenser to be activated (see parameters SFUMCNV and SFUMBOL), it will do this only after such a delay is elapsed. A value of 2 seconds is usually adequate for all models, except for

the gas-heated ones using a fan-assisted or blast burner, in which, owing to the time required for purging the mixing chamber, the fume condenser can be started only after a delay of 18 seconds.

SINCBOL °C 120

Boiler scaling alarm tripping temperature. Such a parameter expresses the temperature value, as measured by the boiler probe, which, when reached owing to the thickness of the scale formed in the boiler, will cause the controller to illuminate the boiler scaling alarm indicator. The value of 120 °C has been determined experimentally and corresponds to a scale thickness equal to 1 to 1.5 mm.

SOFTSTRT - 0

Parameter for pre-setting manual/automatic mode. It is operative in functional levels 6 only. It pre-sets the manual/automatic selector in programmable ovens in different modes after ignition or switching on, ie.:

- if set at "0", the LEDs will blink to indicate that the operator must do the setting;

- if set at "1", it goes directly to the automatic mode;

- if set at "2", it goes directly to the manual mode.

Switching over to the other cooking mode is anyway always possible by simply pressing the same push-button.

sonVNTMX sec 30

Fan start delay. Such a parameter is operative in steaming and thermostatically controlled steaming cycles only and determines a forced pause phase of the fan, in said cycles, when the oven door is being closed. Steam generation starts on the contrary without any delay when the door is closed again.

SPHBOL °C 85

Steam generator pre-heating temperature.

Temperature to which the controller pre-heats, and at which it then maintains the water in the steam generator. At lower temperatures, cycles using steam are interrupted as long as such a value is not restored automatically.

sRIGBOL sec 50

sRIGCEL sec 100

Such parameters respectively express the duration of the alternate operation periods of the boiler (sRIGBOL) and the oven cavity (sRIGCEL) during the temperature rise phase in reconstitution cycles. They are only operative in models provided with boiler. An increase of sRIGBOL at the expense of sRIGCEL will pre-set a higher moisture content inside the cooking cavity, but at the same time increases the time needed to reach the required temperature value in the same cavity. An increase of

sRIGCEL at the expense of sRIGBOL brings about the opposite effect. The related pre-set values have been derived experimentally.

sRIGIMPVsec 10

Duration of steam pulse in reconstitution cycles.

Such a parameter is only operative in electric ovens provided with boiler (no ISG) and expresses the duration of a period of steam injection into the cavity, after the oven

door has been closed, in reconstitution cycles only.

SSCH °C 35

Value at which a cooling-down phase for the internal oven components is started. Such a parameter expresses the temperature value, as measured on the master board (POW 1 or POW 2), above which the controller causes the cool-down fan to be switched on. The same fan will only be switched off if the temperature decreases by at least 5 °C below SSCH (with SSCH=35, this will therefore occur at 30 °C,

sVAPOFF sec 20

Shortest allowable duration of the OFF phase in steaming, combined and reconstitution cycles. Such a parameter serves the purpose of ensuring an off phase of the boiler which has a minimum duration, while being anyway sufficient to ensure the operation stability of the steam control system (in the by-pass).

sVAPON sec 15

Shortest allowable duration of the ON phase in steaming, combined and reconstitution cycles. Such a parameter serves the purpose of ensuring an on phase of the boiler which has a minimum duration, while being anyway sufficient to ensure the operation stability of the steam control system. In electric ovens, the correct value is 15 seconds; in gas-heated ovens with fan-assisted or blast burner it is necessary (owing to the required preliminary purging time) that such a value be increased to 30 seconds (in the by-pass).

sWF2CLN sec 120

Duration of pause in "CLEAN" cycle. This pause phase is provided to enable the detergent, which is sprayed in the cavity by the operator at the end of phase 1, to develop an adequate chemical effect. Such a pause is started automatically upon reclosing the door, and its count-down, in seconds, is shown on the oven cavity temperature display.

TENDCLN °C 99

Temperature at which counting starts for the duration of the phase 1 of the "CLEAN" cycle. The parameter expresses the oven cavity temperature value that determines the beginning of the phase 1 of the "CLEAN" cycle. Such a phase is provided to ensure oven cavity pre-heating by means of steam, thereby causing soil in the same cavity to be "absorbed".

TRAFCLN °C 90

"CLEAN" cycle cool-down temperature. Such a parameter expresses the temperature value being measured in the oven cavity, in correspondence of which the pre-cooling phase, provided in the case that the "CLEAN" push-button is pressed when the oven cavity is still rather hot, is caused to terminate.

TSCBAMX °C 50

This parameter is operative only in those functional levels that are provided with a power-actuable boiler drainage system. It expresses the temperature of the water in the boiler, below which the controller enables

the power-actuated drainage system of the boiler to discharge the water there from. This occurs in the case that the counter of the operation hours of the boiler has reached its own pre-set value (see parameter HHBOLMX). This parameter is set at a value of 50°C in view of preventing the oven from automatically letting off water which is too hot.

2. ADVANCED PROGRAMMING PARAMETERS

Important! If set in an improper manner, advanced programming parameters may damage the appliance. Therefore, they should never be altered or tampered with.

BMSCELPID	°C	0.5	(90)
Non-active band for integral correction of the cell setting.			
DOFCLB	100msec	10	(81)
OFF DELAY for DEBOUNCE LEVEL 2 (BOILER operation).			
DOFCVB	100msec	20	(79)
OFF DELAY for DEBOUNCE LEVEL1 (BOILER safety).			
DONCLB	100msec	50	(80)
ON DELAY for DEBOUNCE LEVEL2 (BOILER operation).			
DONCVB	100msec	20	(78)
ON DELAY for DEBOUNCE LEVEL1 (BOILER safety).			
DONKEYMX	100msec	15	(82)
ON DELAY for delayed keys.			
DSCCELPIDMX	°C	3	(92)
Integral correction of the cell max. setting.			
DSHUMMIX	°C	2	(102)
Delta set by-pass humidifier for mixed cycle. Measured temperature time gap of by-pass corresponding to an humidity level.			
DSHUMRIG	°C	2	(103)
Delta set by-pass humidifier for regeneration cycle. Measured temperature time gap of by-pass corresponding to an humidity level.			
DSRIGBOL	°C	2	(104)
Time gap for steam phase.			
DTCELO	-	-1	(89)
Derived of cell max temperature for starting up.			
DTCINI	°C	30	(87)
Cell temperature initial time gap for CLEAR RAM no initial.			
FL_ABCORT	-	1	(95)
Cell temperature display correction enabling.			
FL_ABHACCP	-	0	(109)
Enabling of function HACCP. Never modify this parameter.			

FL_ABHWI	-	0	(94)
Enabling 1/2 middle power.			
FL_ADVHACCP	-	1	(110)
Select the communication mode HACCP. 0 = Base mode : printer 1 = Integrated mode : PC (Personal Computer) Never ever modify this parameter.			
FL_MIXIR	-	0	(111)
Mixed cycle special for roasted chicken			
FL_DISPLMPPAU	-	0	(112)
Cell light off while in pause.			
INCSCELPID	°C	1	(91)
Increase of the integral correction of the cell setting.			
ISHUMCNVF	see	SHUMCNVFD1	
ISHUMCNV	see	SHUMCNVD1	
MAXNPRG	-	50	(107)
Maximum number of cooking programs available.			
mFCLNMN	min	0	(113)
Minimum time gap of a cooking program for forced CLEAN. When parameter is "0" the forced CLEAN function is disabled. For positive values longer than 1 minute (from 1 to 120) the oven requests confirmation of forced CLEAN cycle when cooking program is over.			
MINSVTR	°C	15	(65)
MINSPRB	°C	0	(67)
These parameters express the lowest temperature value that the operator can set in the cycles: - thermostatically controlled steaming, levels 3-4-6 (MINSVTR) - core-temperature probe control, levels 3-4-6 (MINSPRB).			
MSCHMX	min	60	(59)
Dwelling time of master board at a high temperature. This parameter expresses the time that the controller starts to count from the moment at which the temperature of the master board (POW 1-2) should rise to a value of 60°C without reaching SSCHMX (70°C). Such a condition, which will anyway enable the appliance to go on operating for a further hour, should occur: a) in the case of a failure or damage of the cool-down fan; b) in the case of dirt completely or partially obstructing the ventilation openings and/or the cooling air passage sections; c) in the case that the cooling air inlet (openings provided under the control panel) happens to be too close to hot zones or becomes exposed to the flow of hot vapours, fumes or flue gases.			
QSCELOFF	-	-1	(88)
Parameter Q of SCELOFF = SCEL - (Q + M x DT / DT).			
sIBOLsec	85		
Not used by the controller (provided in view of future applications)			

Positive results will be obtained when value is set to "1" only if threshold values of parameters 119 and 120 are both surpassed.
When value is set to "0" only one of both parameters needs to be surpassed.

sHACCP_DOOR_THR sec 30 (117)
Maximum time for keeping the door open.
This value is not to be surpassed while keeping the oven door opened so that the device FSC is able to operate.

HACCP_F_HIGH - 50 (122)
Threshold of coefficient "F" to obtain positive results with STANDARD RISK food.
This threshold value includes in the parameter the number without decimals separation and therefore is multiplied by 10 (e.g. 50 = 5.0).

HACCP_F_LOW F 10 (119)
Threshold of coefficient "F" to obtain positive results with LOW RISK food.
This threshold value includes in the parameter the number without decimals separation and therefore is multiplied by 10 (e.g. 50 = 5.0).

HACCP_SCEL_THR °C 65 (116)
Minimum temperature threshold set for the cell.
The device FSC gets activated only when the temperature set for cell goes over this threshold.

HACCP_TC_HIGH °C 75 (123)
Temperature threshold in the product core to obtain positive results with STANDARD RISK food.
Positive results will be obtained when temperature in the product core reaches 75°C.
Never ever modify this parameter.

HACCP_TC_LOW °C 57 (120)
Temperature threshold in the product core to obtain positive results with LOW RISK food.
Positive results will be obtained when temperature in the product core reaches 75°C.
Never ever modify this parameter.

HACCP_TPROB_THR °C 50 (115)
Minimum temperature threshold set for the meat temperature probe.
The device FSC gets activated only when the temperature set for the meat temperature probe goes over this threshold.

MAX_OFOTPRB °C 3 (130)
Temperature maximum setting error of temperature probe. This is the maximum value (positive or negative) admitted for parameters OFF TPRB1...2-3-4-5-6. If one of this parameters exceed the threshold the DISPLAY will show the error message EPT3 to indicate that at least one of the MULTIPOINT temperature probe is faulty.

OFFTPRB1 (124)
OFFTPRB2 (125)
OFFTPRB3 (126)
OFFTPRB4 (127)
OFFTPRB5 (128)
OFFTPRB6 (129)
Setting values for MULTIPOINT temperature probe.
See calibrating instructions for temperature probe in page 10, paragraph "CONFIGURATION OF MULTIPOINT TEMPERATURE PROBE".

NORMAL PROGRAMMING PARAMETERS															
				LIVELLO 2 ISG		LIVELLO 3 ISG		LIVELLO 3		LIVELLO 4		ACTIVE COMBI		LIVELLO 6	
NR	DENOMINATION	UNITA MISURA	DEFAULT	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET
1	FL_GAS		0	1		1		1		1		1		1	
2	FL_ISG		0	1	1	1	1			NOTA5	NOTA5			NOTA5	NOTA5
3	FL_FAHR		0	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1					NOTA1	NOTA1
4	LIVELLO_E2P		3	2	2	1	1			5	5	5	5	6	6
5	ABMFLP		0											1	1
6	ISPRB	*C	40												
7	SPHBOL	*C	85												
8	SEBLFUM	*C	100												
9	ALTSLM	MT	0												
10	DEFSCNVF	*C	150												
11	DEFSCNV	*C	150												
12	DEFSMIX	*C	150												
13	DEFSRIG	*C	140												
14	DEFSVTR	*C	85												
15	DEFSPRB	*C	50												
16	MAXDUR	min	480												
17	SFUMCNV	*C	90												
18	SFUMBOL	*C	80												
19	SRIGIMPV	sec	10												
20	SC_HON	sec	5												
21	SC_HOF	sec	25												
22	HHBOLMX	h	8	0	0	0	0	0	0	0	0	2	2	2	2
23	TSCBAMX	*C	50												
24	HHBOL	h	0												
25	HCNV	h	0												
26	HVAP	h	0												
27	HMIX	h	0												
28	OFFTCEL	*C	0	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2	NOTA2
29	SSCH	*C	35	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4	NOTA4
30	R_TARPOT0	*	473	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1						
31	R_TARPOT1	*	870	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1						
32	R_TARPOT2	*	1770	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1						
33	R_TARPOT3	*	2622	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1	NOTA1						
34	DSIMIX	*C	300												
35	DSIRIG	*C	30												
36	SFUMMX	sec	2					18(A)		18(A)		18(A)		18(A)	
37	SVAPON	sec	15					30(A)		30(A)		30(A)		30(A)	
38	SVAPOFF	sec	20												
39	SONVNTMX	sec	30	0	0	0	0								
40	SINCBOL	*C	120					105	113	105	113	105	113	105	113
41	SRIGBOL	sec	50												
42	SRIGCEL	sec	100												
43	ISRIG	*C	20												
44	TRAFCLN	*C	90												
45	TENDCLN	*C	99	95	95	95	95	95	95	95	95	95	95	95	95
46	SF1CLN	sec	300												
47	SWF2CLN	sec	120												
48	SF2CLN	sec	600												
49	MSCELOFF		27	10(B)	20	10(B)	20	10(B)	20	10(B)	20	10(B)	20	10(B)	20
50	PSCELON		0	4(A)		4(A)		4(A)		4(A)		4(A)		4(A)	
51	ISCELON		2	0(A)		0(A)		0(A)		0(A)		0(A)		0(A)	
52	DTCELOFF		2	1	1	1	1	1		1	NOTA5	1		1	NOTA5
53	SOFTSTRT		0												
54	FLNMODPRG		0												
55	FLABHUM		1	0	0	0	0								
56	FLDISPAP		0												
57	SIBOL	*C	85												
58	SSCHMX	*C	70												
59	MSCHMX	min	60												

ADVANCED PROGRAMMING PARAMETERS															
				LIVELLO 2 ISG		LIVELLO 3 ISG		LIVELLO 3		LIVELLO 4		ACTIVE COMBI		LIVELLO 6	
NR	DENOMINATION		DEFAULT	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET	GAS	ELET
60	MAXSCNVF	*C	300												
61	MAXSCNV	*C	300												
62	MAXSMIX	*C	250												
63	MAXSRIG	*C	250												
64	MAXSVTR	*C	99												
65	MINSVTR	*C	15												
66	MAXSPRB	*C	99												
67	MINSPRB	*C	0												
68	TRAFHMX	*C	180												
69	DSPRB	*C	5												
70	DTSTEP1	*C	1												
71	DTSTEP2	*C	5												
72	DTSTEP3	*C	10												
73	DSVAP	*C	1												
74	DSRIG	*C	40			60	60								
75	TMAXCEL	*C	320												
76	TMAXBOL	*C	180					125	125	125	125	125	125	125	125
77	TMAXISG2	*C	180												
78	DONCVB	100mS	20												
79	DOFCVB	100mS	20												
80	DONCLB	100mS	50												
81	DOFCLB	100mS	10												
82	DONKEYMX	100mS	15												
83	SOFFLP	Sec	18											(C)	(C)
84	STOFLP	Sec	40												
85	SSCBAMX	Sec	120	0	0	0	0	0	0	0	0				
86	STCELMX	Sec	4												
87	DTCINI	*C	30												
88	OSCELOFF		-1												
89	DTCELON		-1												
90	BMSCELPID	*C	0.5												
91	INCSCELPID	*C	1												
92	DSCCELPIDMX	*C	3												
93	SCELONMX	Sec	15												
94	FL_ABHWI		0												
95	FL_ABCORT		1												
96	SHUMCNVFD1	*C	43												
97	SHUMCNVFD2	*C	80												
98	ISHUMCNVF	*C	1												
99	SHUMCNVD1	*C	50												
100	SHUMCNVD2	*C	70												
101	ISHUMCNV	*C	1												
102	DSHUMMIX	*C	4												
103	DSHUMRIG	*C	4												
104	DSRIGBOL	*C	2												
105	T_TARPOT0	*C	50												
106	T_TARPOT3	*C	300												
107	MAXNPRG		50												
108	SEL5060		0	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3	NOTA 3
109	FL_ABHACCP		0												
110	FL_ADVHACCP		1												
111	FL_MIXR		0												
112	FL_DISLMPPAU		0												
113	mFCLNMN	min	0												
114	FL_ABHACCPSPV		0									1	1		
115	HACCP_TPRB_THR	*C	50												
116	HACCP_SCEL_THR	*C	60									65	65		
117	sHACCP_DOOR_TO	Sec	30												
118	FL_HACCP_AND_LOW		1												
119	HACCP_F_LOW		60									10	10		
120	HACCP_TC_LOW	*C	54									57	57		
121	FL_HACCP_AND_HIGH		1									0	0		
122	HACCP_F_HIGH		500									50	50		
123	HACCP_TC_HIGH	*C	70									75	75		
124	OFFTPRB1	*C	0												
125	OFFTPRB2	*C	0												
126	OFFTPRB3	*C	0												
127	OFFTPRB4	*C	0												
128	OFFTPRB5	*C	0												
129	OFFTPRB6	*C	0												
130	MAX_OF TTPRB	*C	4									3	3		
131	FL_ABPRBNOK		1									0	0		

FSC